

ANNEX 6-1

## Sound waves and vegetal organisms

by

Étienne Boucher

Marie-Hélène Jolicœur

Amélie Boudreau

Olivier Bergeron

*students at Gérald-Godin College (Montréal, Canada)*

### Hypothesis

Exposing plants to a particular "protein music" stimulates production of the corresponding protein.

### Theory

Our experiment is based on the work of Dr. Joel Sternheimer, a French physicist who developed a theory of harmonic resonance relating sound waves to de Broglie waves associated with amino acid assembly during protein synthesis.

### Peroxidase P7

Overproduction of this enzyme has inhibitory effects on root development and overall growth.

*Brassica rapa*

Fast-growing plant (15 cm in 15 days)

Sub-kingdom: Vasculara

Branch: Spermatophyta

Sub-branch: Angiosperma

Class: Dicotyledona

Order: Crucifera

### Experimental set-up

Loudspeaker

two 30-W fluorescent tubes

length  
width

Two controlled environments

- Lighting
- Soundproofing
- Type of soil
- Quantity of water

Permanent computer-assisted data recording of certain parameters

Experimental protocol

Two identical culture groups of 20 plants each were established. One group was exposed to a series of sound waves 30 minutes per day for 15 days. Since submitting our report, we have inverted the groups and repeated the experiment.

Results

Based on the two experiments, we noted that growth of the experimental group was considerably inhibited. Overproduction of the protein peroxidase P7 could explain those results.

Conclusion

The results obtained confirm our hypothesis that it is possible to influence the synthesis of a protein by applying a series of specific sound waves corresponding to the amino acid sequence of the protein.